Last week the subject was again introduced in the House of Lords, with, as before, an unsatisfactory result. The action of Government with reference to Scottish educational endowments is rather an impressive commentary on the conduct of the obstructives who are so anxious to reduce the standard of education in England. The effect of the Scotch measure will be greatly to extend the means of education for those who usually attend Board Schools, placing as it does at their disposal the education to be obtained in secondary schools, an advantage, we should think, likely to be largely taken advantage of. Until some similar course be taken with reference to England, where so many valuable educational endowments have been diverted from their legitimate purpose, it seems to us cruel rigidly to limit the function of elementary schools in reference to pupils of exceptional promise. Still more cruel is it to turn out the great bulk of the children with an education quite unworthy of the name, and which renders them little better fitted to cope with their surroundings than if they were entirely unlettered. It is our bounden duty, since we insist on keeping children at school till a certain age, to do the best we can for them; and to turn them out equipped with nothing more useful than the three R's is a mere mockery of education. If reading, at all events, is to be a really useful acquisition, let us make them understand that there are things quite as wonderful and quite as well worth reading about as the horrors of the penny dreadfuls. Many of these children, the working men and working women of the future, will have but little time to put the three R's to much use, whereas if well grounded in the elements of one or two of the most useful of the sciences, they will have a continual source of pleasure within themselves, requiring neither books nor pens, but only the exercise of thoughtful observation. That education is admittedly the best which enables one to cope most successfully with the difficulties of his surroundings, and we cannot see how any candid man will deny that for this purpose an accurate training in the science of common things is worth all the books in the world. That the Government system as at present established commends itself to the sense of the people is clear from the fact that Government schools are practically killing all competitors. As to the dread of the over-education of the people, this is a bogy which only needs to be stared at to vanish. Do we find any lack of men and women to do all sorts of work in Germany or France, or in any other country where the people have a really substantial education? In nearly every county of the kingdom are local scientific societies, many of which are composed mainly of working men who have educated themselves into whatever they may know of science; but we have yet to hear that they are more discontented with their position than unlettered Hodge. The real truth is, as is too clearly shown on the Continent, the better educated the working man is, the better workman does he turn out to be. The great mistake is to confound a smattering with a grounding, and this, it seems to us, is the mistake made by Lord Norton and those who side with him, and possibly may account for the opposition to the Fourth Schedule. The exclusive use of such a reading-book as Lord Norton threatens to compile would be the best help to a smattering education; a very few hours a week devoted to a few well-selected experiments, the judicious use of specimens and diagrams, a little training of the observing faculties of children, and the systematic teaching of the great elementary facts of one or two sciences would be a welcome relief to the pupils, and would do far more for their real education than a library of reading-books.

Sir John Lubbock has given notice that he will shortly introduce the subject into the House of Commons; it is inconceivable that that body will permit anything like retrogression in the matter of education; they cannot do so without being liable to the imputation of class legislation. At the best, our working men and working women, it must be confessed, have a hard life of it, many of their hardships resulting from ignorance of the commonest laws and facts of nature. If we wish to make them contented with their lot, let us lighten it by enlightening their minds and giving them the means of making the best of their circumstances. It is against the teaching of all history to maintain that what the retrogressionists are pleased to call over-education will lead to all sorts of political and social evils. It is, history tells us plainly enough, the ignorance, and not the enlightenment, of the people that should be feared. The better educated we are all round the more likely are we to keep our foremost place among nations who have already, solely by the superior education of all classes, got ahead of us in some important respects, and the more likely are we to continue to advance by gradual evolution instead of by violent revolution, which always requires a large substratum of ignorance to work with.

ARGENTINE ENTOMOLOGY

Hemiptera Argentina enumeravit speciesque novas descripsit Carolus Berg (*Curonus*). Bonariæ, *ex typographiœ* Pauli E. Coni. Hamburgo, *in biblopolio gassmannii.* (Frederking et Graf, 1879.)

ENTOMOLOGY is finding a new centre in Buenos Ayres; synchronous with the first part of Dr. Burmeister's treatise on the Lepidoptera of the Argentine Fauna, lately noticed in these columns, has appeared the above work on the less popular and very much less known order Rhynchota. In common with many entomologists, we use this last term rather than that of Hemiptera, as written by our author, for the following reasons. Linnæus founded the order Hemiptera, but included therein non-allied insects, to which the name Orthoptera was ultimately applied by Olivier, whilst Fabricius was the first to separate the true "bugs," under the name of Ryngota, which was afterwards linguistically purified into Rhynchota. Not only, however, did the great Swedish naturalist first propound the order Hemiptera, but we are also indebted to Sweden, in the person of the late Prof. Stål, for gathering together with critical and exhaustive care the descriptive work of an intervening century, and, by the help of a splendid collection formed at Stockholm, reducing the classification to a system, and making the study of the order a possibility. It is this system which is followed by Prof. Berg in the modest work under notice, which is not a monograph, but rather an enumeration of the known species, accompanied by descriptions of new ones. The work is therefore special in its character and classificatory in its

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aim; no biological conclusions are attempted nor structural details given, save such as appertain to generic or specific diagnosis. Its value therefore is to the student of the local fauna and the generaliser in the study of geographical distribution.

The work of course must be considered to a certain extent as introductory only; many species will necessarily be discovered and added to the fauna, whilst of those described it is equally probable that some will prove of synonymic value only. The last conjecture becomes almost a certainty when an estimate is made of the difficulties under which Prof. Berg must have worked, so far removed from all the large collections, identifying or separating frequently by the help of poor descriptions, with the impossibility of examining the original types. His descriptions however are very clear, and have as a rule appended the *differentia specifica* from a nearly allied form. It is much to be regretted that this course is not more usually followed by some other entomologists, and it would almost appear in many cases that from being so frequently told by the biological philosopher that descriptive is the lowest form of scientific work, that the describers themselves in despair had done the work in the very lowest manner. It was well said that "some see differences and no resemblance, others resemblance and no difference, whilst some again can see neither the one nor the other," and thus the help acquired from comparative diagnosis appended to an exhaustive description becomes the more necessary when it is not possible to give a figure of the species. Whatever conception may apply in the mind of the individual worker as to the much vexed term "species," it is at least to be expected that the limits of variation can only be estimated by one who has thoroughly studied a group and knows some little of their life histories. It is in this field that the specialist should really be considered a prophet, and in entomology there are not only families but even genera which are so peculiar and unique in the variation of their species that the *variable* might with advantage be added to the *structural* diagnosis. In the Rhynchota this is extremely applicable, even structural characters which are constant and specific in one genus being variable and of no specific value in another, whilst colour and size, generally of no moment, are in some few instances beacons which denote specific differentiation.

In studying a work of this nature we become sensible of the vast unexplored field of entomology. We here possess the identifications and names of the forms constituting a fauna, but by what methods its homogeneity was secured remains still to be discovered. Which species or genera are even pleistocene forms which have been introduced by man, or by other means of involuntary migration, we have at present no record. The interdependence on the botanical geography of the district must always be a factor in the distribution of the non-carnivorous forms of the Rhynchota, and the meteorological conditions of a country will in future be more studied by entomologists who are investigating local faunas.

Prof. Berg has introduced a valuable addition to his work in the descriptions, where possible, of immature forms. Larvæ in this order are most difficult to adequately describe, and we may hope that the author in some subsequent publication may be able to give us illustrations of the same.

W. L. DISTANT

THE HUMAN VOICE

The Mechanism of the Human Voice. By Emil Behnke, Lecturer on Vocal Physiology at the Tonic Sol-fa College. (London: J. Curwen and Sons, 1880.)

THE object of this little book is to give singers a plain and comprehensible view of the musical instrument on which they perform. The author seems to have succeeded in this attempt remarkably well. He has evidently had much practical work himself, and has especially set himself the task of examining the action of the vocal organs during singing by means of the laryngoscope, and his record of his own experience in acquiring the use of that beautiful instrument is not only interesting but of much practical value. The last section of the book is devoted to the teachings of the laryngoscope, as to the action of the vocal ligaments in producing voice, with especial reference to the so-called registers. "A register consists of a series of tones which are produced by the same mechanism," is his definition (p. 71), which is new and complete, and he proceeds to explain the different mechanism of each kind of register as actually observed on singers. There are some good remarks on breathing (pp. 17-22). All information is given throughout in clear, intelligible language, and illustrated by fourteen woodcuts (not all original), which are purposely rather diagrammatic in character, in order not to confuse the eye with too many details at a time, but every essential point is gradually introduced. The author seems to have been diligent in the consultation of authorities as well as in practical work of his own, and the book may be safely recommended to all singers, and others who are desirous of knowing how vocal tones are produced.

There are a few things which may be pointed out in the hope that they will be corrected in a second edition, which ought to be soon required. On p. 4 the author implies that former musical pitch was a major to a minor third flatter than at present. For all music now sung the difference was scarcely more than a semitone. On p. 30, and again on p. 70, he says: "The vocal ligaments, by their vibrations, cut the stream of air passing between them into regular waves." It is difficult to see how these words convey, even metaphorically, a correct conception of what happens. "To cut a stream into regular waves," is not a very intelligible operation. The expression should certainly be altered, and a few lines added to convey the full notion. On p. 37 the author seems to be wrong in considering that glottis (or "tongue" in the singular) refers properly to the vocal ligaments (or "tongues" in the plural). It is merely what he terms the "chink," or the tongue-shaped space between the vocal ligaments as shown in Pl. X. A. He also omits to notice especially the cartilaginous glottis between the pyramids (arytenoids), although it appears in Plate X. C, and XIV., XV., XVI. On p. 44 he gives as a function of the pockets (ventricles of Morgagni) that "they allow the stream of air which has just been converted into tone to expand sideways, thereby materially adding to its resonance." The whole phrase is confused and should be entirely re-written; the

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